
Blood-forming stem cells for Japanese nuclear workers?

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According to a story in The Guardian, Japanese officials are considering blood-forming stem cell transplants in workers exposed to high radiation levels. They write:

“ The proposal has been drawn up as a precautionary measure that could potentially save the lives of workers if they receive high doses of radiation while battling to bring the damaged nuclear reactors under control.

If those transplants take place and are effective, the brave men and women will be part of a story that began with the bombing of Hiroshima and Nagasaki during World War II. People exposed to radiation from those bombs frequently developed leukemias. Investigating those cancers led scientists in Canada to discover cells in the bone marrow that constantly form new blood and immune cells. The leukemias arose when bone marrow stem cells suffered mutations and turned some cells cancerous.

Eventually, scientists used these discoveries to develop bone marrow transplants, in which a person's bone marrow is eliminated by radiation then replaced with donor bone marrow. Blood-forming stem cells within that bone marrow then form a new blood and immune system - presumably one that's cancer-free. CIRM grantee Irv Weissman at Stanford University identified the blood-forming stem cells amidst the many cell types in the bone marrow.

Now, the technique that started with radiation-exposed people in Japan could help the brave men and women who have been exposed while trying to save the nuclear plants damaged during the country's earthquake and tsunami. The idea is that Japanese scientists would freeze blood-forming stem cells from workers, which could then be used to treat those workers if they are exposed.

Although the stored cells could treat blood cancers, some warn that workers might consider the cells a safety net and take unnecessary risks. Stored blood cells wouldn't be able to treat damage to other tissues. The Guardian quotes Robert Peter Gale, a US medical researcher advising the Japanese government:

“ "These cells can reconstitute bone marrow function; that is not the only target of high dose radiation, they would have damage elsewhere, to their lungs, gastrointestinal tract and their skin."

He also warns about the logistics of extracting blood-forming stem cells from the roughly 800 workers.

- A.A.

Tags: Blood, leukemia

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